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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/559,362	12/06/2005	Abraham Jan De Bart	NL 30637	5658

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EXAMINER

BURD, KEVIN MICHAEL

ART UNIT	PAPER NUMBER
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2611

NOTIFICATION DATE	DELIVERY MODE
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04/10/2009

ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ip.department.us@nxp.com

Office Action Summary	Application No. 10/559,362	Applicant(s) DE BART ET AL.	
	Examiner Kevin M. Burd	Art Unit 2611	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 13 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 December 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

1. This office action, in response to the amendment filed 1/13/2009, is a final office action.

Response to Arguments

2. The previous objection to the drawings is maintained. The labeling of the components found in the drawings is necessary for the understanding of the drawings.
3. The previous rejection of claim 7 is withdrawn in view of the amendment to the claim.
4. Applicant's arguments with respect to claims 1-9 have been considered but are moot in view of the new ground of rejection necessitated by the amendment. New claims 10-15 are also rejected below.

Drawings

5. The drawings are objected to because the unlabeled rectangular boxes shown in the drawings (specifically figures 3 and 4) should be provided with descriptive text labels. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet,

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and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-10 and 12-14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al (US 2004/0066773) in view of Chadha et al (US 2004/0156309).

Regarding claim 1, 5, 7-9 and 12, Sun discloses an OFDM wireless communication system comprising a receiver (paragraph 0004). The receiver and the method for using the receiver is shown in figure 6 (paragraph 0032). The receiver comprises a channel corrector (FEQ 603) for receiving an input signal from the FFT 601. The equalizer also receives a correction signal from channel estimator 602 to

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correct for an amplitude and/or phase of the input signal. The equalizer will output an equalized signal. The channel estimation unit comprises a Viterbi decoder 604 that is a decision circuit for providing decision feedback to the equalizer (paragraph 0066). A difference between the input signal and the feedback signal is determined in block 606 and this difference signal is used to adjust the equalizer via channel estimator 602. Sun does not disclose the FEQ corrects for an amplitude and a phase of the input signal. Chadha discloses an OFDM receiver comprising a FEQ coupled to the output of the FFT in figure 5. It is generally the complex frequency domain digital samples that are processed by the receiver to fine tune and update the synchronization and timing provided by the synchronization circuitry and the FEQ can be used to correct for frequency selective amplitude adjustments and phase delay due to multipath propagation effects (paragraph 0015). The FEQ selectively provides amplitude and phase shifts to the different frequency domain digital sequence to compensate for channel effects (paragraph 0041). This is done for all the subcarriers of the OFDM system and for all errors generated by the channel effects. It would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate the FEQ for correcting amplitude and phase of the received signal in the OFDM communication system of Chadha into the FEQ of the OFDM communication system of Sun. By removing effects of the channel, the data will be recovered quickly and correctly at the receiver, improving the overall efficiency of the communication system.

Regarding claim 2, the receiver comprises a FFT circuit 601 for supplying an input signal to the equalizer 603 (Sun: figure 6).

Regarding claims 3 and 6, a comparison between the input signal (A) and the decision feed back signal (B) is conducted in block 606. Block 606 will output an information signal to the channel estimator 602. Channel estimator 602 will update or correct the equalizer 603 (Sun: figure 6).

Regarding claims 4 and 13, the combination of Sun and Chadha discloses the receiver described above. Sun further discloses an initial estimate of the channel is conducted using pilot signals (paragraph 0074). This information will be input to the equalizer and equalized data will be fed back to block 606 for comparison to the input signal. The combination does not disclose filtering of the signals present in the receiver. Official notice is taken that filtering of received signals is well known in the art of data communication. The filtering of received signals allows undesirable components of the received signal to be removed prior to the processing of the signal. This will prevent the undesirable components of the received signal from causing errors to the processed received data. Removing of these errors allows the recovery of the originally transmitted data to be conducted quickly and efficiently. For these reasons, it would have been obvious for one of ordinary skill in the art at the time of the invention to incorporate basic filtering processes into the receiver of the combination of Sun and Chadha.

Regarding claims 10 and 14, the combination discloses the updated channel estimate is a function of the previous channel estimate and the feedback signal from the slicer as shown in figure 6 of Sun.

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7. Claims 11 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sun et al (US 2004/0066773) in view of Chadha et al (US 2004/0156309) further in view of Hart et al (US 7,161,896).

Regarding claims 11 and 15, the combination of Sun and Chadha discloses the receiver stated above. The combination does not disclose the receiver comprises and averaging unit to average an initial estimate and the difference signal. Hart discloses the OFDM receiver shown in figure 5A. Rough channel estimates are calculated and are averaged to smooth the rough channel estimates in a filter. The smoothed rough channel estimates provide channel estimates for each subcarrier. The channel estimates for each subcarrier are then used to equalize received data in the payload (column 14, lines 27-43). The use of the smoothing filters will allow for a more accurate channel estimate and allow the received signal to be recovered free of interference from the channel. For this reason, it would have been obvious for one of ordinary skill in the art to utilize the averaging and filtering of Hart in the receiver of the combination of Sun and Chadha.

Conclusion

Applicant's amendment necessitated the new grounds of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin M. Burd whose telephone number is (571) 272-3008. The examiner can normally be reached on Monday - Friday 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David C. Payne can be reached on (571) 272-3024. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Kevin M. Burd/
Primary Examiner, Art Unit 2611
4/6/2009